

Appl. No. 09/941,885
Resp. filed Oct 14, 2003
Office Action mailed May 30, 2003

Docket No. 54317-020500

REMARKS

The Applicant has carefully considered the Office Action of May 30, 2003 and sets out a detailed response. The Applicant would like to thank the Examiner for allowance of claims 1-10 and 28. Claims 22 and 23 are amended with this response. Reconsideration of the above application is respectfully requested.

1. Claims rejected under 35 U.S.C. § 102(e)

Claims 11 and 17-21 were rejected under 35 U.S.C. § 102(e) as being anticipated by US Patent No 6,017,276 to Elson et al. The Applicant respectfully disagrees with the Examiner's rejection of claims 11, 17-21 as being anticipated by Elson *et al.*

The Examiner states "as in an amusement ride or flight simulator, the present invention requires recording of an image, which would typically maintain the axes of the recording camera and lens substantially horizontal, or matching of fields of view of viewing angles, as is described in US. Patent No. 4,752,065, which is incorporated by reference in Elson et al.

The Examiner, however, has misread the '065 reference. The following is a paragraph quoted from the '065 patent:

"FIG. 4 illustrates a recording system 150 mounted on a moveable vehicle 152, and which includes a **motion picture [sic] camera 154 that records a view seen from the moving vehicle** and which will later form the motion picture image on a screen. The system also includes a motion detector apparatus 156 which includes a group of accelerometers 158, 160, 162 for measuring acceleration in three directions, and a rotation sensing instrument 164 for sensing the **pivoting of the vehicle about each of three perpendicular axes**. A recorder 166 is connected to the accelerometers and pivot sensing instrument to record accelerations and **pivoting of the vehicle**. A recording representing the information on the original recording, will be played during projection of the motion picture. As mentioned earlier, the vertical acceleration or the original vehicle is simulated by accelerating the passenger frame up and down; lateral or sideways acceleration can be simulated by moving the passenger frame sidewardly. Forward and rearward acceleration is largely simulated by tilting the passenger frame. **Pivoting in pitch and roll (arrows 88 and 84 FIG. 3) are simulated by corresponding tilting of the passenger frame**. Tilting in yaw (e.g., a car turning to the left or right) is simulated by tilting in roll and accelerating to the left or right to induce forces similar to those encountered when turning a vehicle left or right.

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When passengers view the screen and they are accelerated by short distances or tilted, the fact that the screen does not also move has been found not to affect the entertainment effect. This is because **the image on the screen is taken by a camera that will tilt.**" (Col. 4, lines 39-48, emphasis added)

The '065 disclosure specifically states that the camera is fixed and mounted to the vehicle. The disclosure also specifically states that the vehicle pivots **"about each of three perpendicular axes."** Therefore, the camera, which is mounted to the vehicle, pivots about each of three perpendicular axes, in the same way as the vehicle.

The disclosure refers to the movements as pitch, roll and yaw, and represents the movement as rotational arrows 84, 88 and 89 in FIG. 3. Standard definitions of the terms "pitch", "roll", and "yaw" can be found in the Merriam-Webster Online Dictionary (<http://www.m-w.com>). Pitch is defined as "to turn about a lateral axis so that the forward end rises and falls in relation to the after end." To "roll" is "to revolve around a longitudinal axis", and "yaw" is defined as "to turn by angular motion about the vertical axis."

A camera twisting and turning in this manner will record a horizon on the film that moves up and down and rotates clockwise or counterclockwise. This is the antithesis of the present invention.

Furthermore, **it is not typical to maintain the axes of the recording camera substantially horizontal** during the filming of aerial footage. Generally, the camera is pointed toward the ground, where the action is. The Examiner is requested to consider films of police car chases taken by helicopter, or gun sight footage of aircraft attacking ground targets. Even if aircraft attack other aircraft, the camera twists and turns along with the aircraft, and **does not maintain substantially horizontal axes independent of the movement of the aircraft.**

Therefore, it is not inherent in photography that the camera is kept horizontal during filming.

Claims 11, 17, 18, 20 state that during recording, the longitudinal and transverse axes of the camera and lens are maintained substantially horizontal.

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Claim 19 states that the field of view of the projected image substantially matches the field of view of the recorded image.

In Claim 21, the horizontal and vertical scene angles and the horizontal and vertical viewing angles are substantially matched. Claim 21 also says that the scene angles are measured from the center of the front surface of the lens.

The front surface of the lens always sees the real world, no matter what the orientation of the lens, projector or film. In other words, the scene angles depict the real world before the images pass through the lens onto the film. It is not true that if we allowed the camera to twist and turn, and then we projected the resultant film through a stationary projector, the scene and viewing angles would be identical. Remember that the scene angles are always the real world scene angles, so we must project them to look as they do in the real world. If we projected the scenes taken with a camera that pitched, rolled and yawed, the projected images would likewise appear to pitch, roll and yaw. This would not provide to a viewer the sense of reality, as accorded by the present invention.

For example, suppose that an observer of the real world laid on his side, or stood on his head. The real world would not change at all, even though the observer had rotated 90 or 180 degrees. In the present invention, the projected image will not rotate either, and will substantially depict the real world.

Claim 19 was intended to convey this same philosophy. In order to make it clearer, the term "recorded image" has been amended to recite "observed image." Support in the specification is paragraph 0005.

Accordingly, the absence of any disclosure, teaching or suggestion in Elson et al. of features such as a downward looking audience where the screen extends below the audience, the lens centerline being positioned away from the projector or film centerline, the matching of scene angles and viewing angles, and maintaining the recording camera lens horizontal as discussed above, means that there is no anticipation, and the Examiner is respectfully requested to withdraw the anticipation rejections.

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2. Claims rejected under 35 U.S.C. § 102(b)

Claims 11 and 17-21 were rejected under 35 U.S.C. § 102(b) as being anticipated by US Patent No. 5,845,434 to Hayashi.

The Examiner believes that it is inherent in recording that the camera and lens are maintained horizontal. As explained above, it is not inherent that the camera and lens are maintained horizontal, and therefore, Hayashi fail as an anticipatory reference.

The three main configurations disclosed in Hayashi are depicted in FIGS. 2, 8 and 11. FIG. 2 demonstrates how far off this reference is from the applicant's invention, and why someone ordinarily skilled in the art would not look to this reference as prior art for the purpose of designing a system as claimed.

Hayashi does not appreciate the importance of maintaining a straight horizon (see FIGS. 8 and 11, which would project a curved horizon), and certainly, Hayashi has no appreciation for the need to match fields of view or viewing angles as claimed in claims 11, 17, and 19-21.

Claims 22-27 and 29 are rejected under 35 USC 102(b) as being anticipated by US Patent No. 3,998,532 to Dykes.

Dykes, however, is not related to the Applicant's invention. The Examiner refers to numerals 28, 30 and 32 in Fig. 1 as being a projection lens positioned above the viewer, with the longitudinal axis of the projection lens being substantially horizontal. However, there is only one lens 28, with items 30 and 32 being mirrors which reflect light passing through projection lens 28. (Col. 2, lines 40-43) The longitudinal axis of the projection lens is vertical, not horizontal as specified in all of the subject claims, and the mirrors reflect the light away from the vertical path, onto the projection screen. There is no discussion or suggestion of moving the lens relative to the film to effect the position of the horizon.

Dykes provides no discussion or suggestion of matching fields of view of projected and recorded scenes. The comment in the Abstract of '532 that perspective distortion is minimized is not tantamount to teaching that fields of view are substantially matched. The specification

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explains precisely what the terminology means, and it does not refer to matching fields of view. The '532 patent puts the projection point close to the eyes of the observer "to place the eyes of the observer within the required acceptable distance from said exit pupil to avoid perspective distortion in the picture as viewed by the viewer." (Col. 2, l 2-5) "The provision of the secondary mirror, in accordance with one aspect of the invention, allows the overall projector to be suspended above the head of a viewer 36. This arrangement provides a viewing position wherein the eyes of the viewer are in close approximation with the exit pupil of the lens system to thereby eliminate perspective distortions... (Col. 2, lines 45-52) This depending arrangement of equipment and resulting close arrangement of observer's eyes and centered sphere arrangement provides for minimized perspective distortion of image as viewed by the viewer... (Col 3, lines 61-65)

The problem that Dykes was trying to avoid was an apparent distortion seen by an observer off axis with the projected image, i.e. anamorphic distortion, as was made famous in the Hans Holbein painting "The Ambassadors," in which a skull appears distorted when seen from one vantage point, but perfectly normal from another. This is explained, for example, at <http://www.artborder.com/anamorph.html>.

Another example of anamorphic distortion is with road signs that are painted on the street, such as "PED XING" and "STOP HERE". When viewed from the sidewalk or when crossing the street - the words are often hard to read, and appear elongated. However, these signs are intended for viewing by people in cars approaching at a distance. The viewing angle of the viewer in a car is much different from that of the pedestrian, and the letters appear to be more normal, rather than elongated. Holbein intentionally introduced anamorphic distortion into his painting, and Dykes is seeking to reduce it. The present invention goes well beyond reducing anamorphic distortion.

There is no teaching or suggestion that fields of view need to be matched or should be matched, nor is this in any way implicit. Furthermore, Dykes makes no mention of the recording steps cited in claims 22-24.

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3. Claims rejected under 35 U.S.C. § 103(a)

Claims 6 and 12-16 were rejected under 35 U.S.C. § 103(a) as being obvious in view of Hayashi and further in view of US Patent No. 3,469,837 to Heilig.

However, claim 6 is dependent on claim 1, which was allowed. Therefore, claim 6 should be allowable.

Similarly, claims 12-16 depend from claim 11, which should be allowable in view of the arguments provided above. The Applicant has clarified the disclosure of Elson et al, and shown that it is not inherent that filming an aerial scene, or even an entirely ground based scene, is maintained horizontal.


Minor language changes were made in claims 22 and 23. These amendments are merely clarifying and in no way should be considered amendments in view of the prior art. The language uses terminology consistent with the specification and has proper antecedent basis.

In conclusion and in view of the above, it is submitted that all of the pending claims recite limitations that are neither taught, disclosed nor suggested by the cited references. Accordingly, this application is now in good order for allowance, and such early action is respectfully solicited. Should matters remain which the Examiner believes could be resolved in a telephone interview, the Examiner is requested to telephone the Applicant's undersigned agent.

Respectfully submitted,

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